

An aerial photograph of a forest in winter. The ground is covered in a thick layer of white snow. Scattered throughout the landscape are numerous evergreen trees, their dark green foliage contrasting with the white snow. Some trees have a yellowish tint, possibly due to the lighting or the presence of evergreen shrubs. The overall scene is a serene, high-angle view of a winter woodland.

MISSOURI CONSERVATIONIST

VOLUME 84, ISSUE 1, JANUARY 2023
SERVING NATURE & YOU

Xplor



Looking for a way to coax your kids to unplug, climb off the couch, and get outside? Then check out **Xplor**, the Conservation Department's free magazine for kids and kids at heart.

Six times a year, **Xplor** serves up eye-popping art, photos, and stories about Missouri's coolest critters, niftiest natural places, and liveliest outdoor activities. The magazine is free to Missouri residents (one subscription per household, please). Out-of-state subscribers pay \$5 per year; out-of-country subscribers pay \$8.



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MISSOURI DEPARTMENT OF CONSERVATION

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MISSOURI CONSERVATIONIST



ON THE COVER

Aerial view of Holly Ridge
Conservation Area

 **DAVID STONNER**

Drone: f/3.5, 1/60 sec, ISO 100

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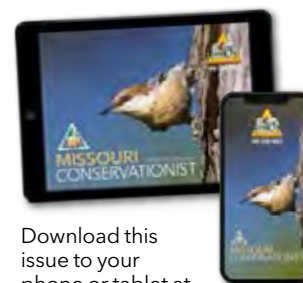
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Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

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READER PHOTOS

I loved *Through Your Lens* in the December issue [Page 10]. We live in a beautiful and fascinating place. There is no way we can see all the beautiful moments happening all around us. Keep up the incredible work.

Tina Loftus
Marshfield

THROUGH YOUR LENS

I was astounded by the outstanding reader submitted photos highlighted in the December 2022 edition. Kudos to Dan Staples for his once in a lifetime shot — coyote vs. trumpeter swan. I like to think I am pretty good with a camera, but many of these photos are better than anything I've ever shot.

Bill Crowe Springfield

When I read *Through Your Lens* had selected among 6,000 photos, I thought what fun! Then, when I enjoyed the excellent finalists, I recognized the daunting task undertaken by your staff. To pick 30 photos (0.005%) out of 6,000 must have been exhausting. I struggled with picking ONE of the 30 as a personal favorite.

Audrey Putthoff via email

TROUT SLAM

At age 64, I accomplished the MDC Blue Ribbon Trout Slam. I read about the slam in the *Conservationist*. My brother-in-law, who taught me how to fish for trout with a fly rod, gave me a lot of encouragement to participate after he completed the gold level, and my husband agreed to team up with me. But I was not convinced until I saw how few women's names were on the list of achievers. I thought I would like to see that change.

What fun I had finding the streams then wading their crystal-clear waters, sharing them with the fish, turtles, birds, whitetail deer, and even bald eagles. Meeting amazingly nice people who could not wait to share all their knowledge to help out. But, for the most part, not having to share these absolutely beautiful places with another soul.

I caught my gold level rainbow trout at the North Fork of the White River at Rainbow Springs.

This past spring and summer I have talked about the Trout Slam to just about anyone who would listen, particularly to women. I am happy to see other women fishing, especially outside the trout parks, and I tell them so. It seems we have an immediate connection and understanding.

Wishing you tight lines.

Linda Haislar via email

FOR THE LOVE OF DOGS

As a girl who adored her grandpa, I was ecstatic when he started taking me duck and goose hunting with him in the 1970s. I treasured those early morning hunts when we walked to our duck blind in the dark in all kinds of weather conditions. Watching the sun rise and the fog dissipate from around us, the whistle of wings overhead, ducks dropping into the water as our retriever swam after them, and the smell of burnt gunpowder are some of the memories that came rushing back to me as I read *Flush, Retrieve, Tree, Repeat* [November, Page 16]. Thanks for providing Missourians with a quality outdoor magazine.

Debbie Muetz via email

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Have a Question for a Commissioner?

Send a note using our online contact form at mdc.mo.gov/commissioners.

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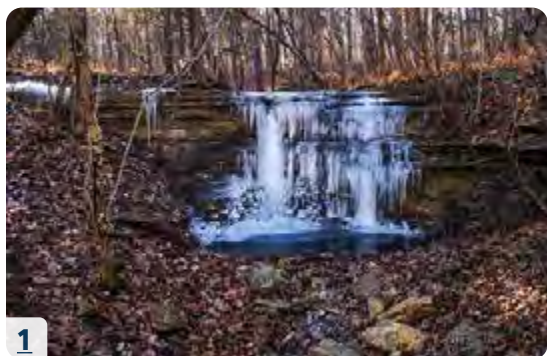
Barry
Orscheln

The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.



Want to see your photos in the Missouri Conservationist?

Share your photos on Flickr at
[flickr.com/groups/mdcreaderphotos-2023](https://www.flickr.com/groups/mdcreaderphotos-2023)
or email Readerphoto@mdc.mo.gov.



1

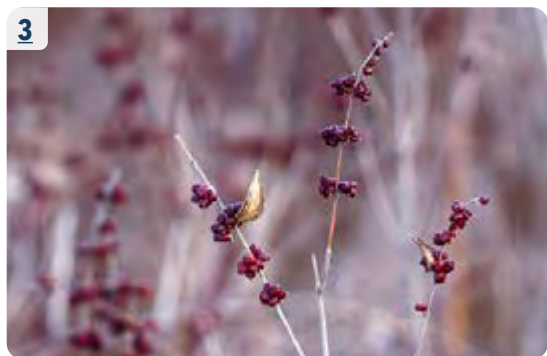
1 | Valley View
Glades Natural
Area by **Mike
Conley**, via Flickr

2 | Double-crested
cormorant by
gradeschoolpizza,
via Flickr

3 | Coralberry
by **Mary Grinter**,
via Flickr



2



3



Want another chance to see your photos in the magazine?

➔ In the December issue, we plan to feature even more great reader photos. Use the submission methods above to send us your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.



Up Front

with Sara Parker Pauley

✱ How fitting that the month of January is named for the Roman god Janus, god of beginnings and endings, who is usually depicted with two faces — one looking back to the past and the other looking forward to the future. It is fitting because this time of year lends itself to reflection of our past — and also hope and preparation for all that lies ahead. Coined the “fresh start effect,” research suggests people are more likely to reflect and take action toward change when tied to a milestone, such as New Year’s Day. Real action is even more likely to occur if supported by others.

In this issue, as with each January issue, we present you with the Annual Review — a reflection of the myriad of conservation work the department, along with our many partners, accomplished in the previous fiscal year. From research on wild turkeys to restoration efforts of the brown-headed nuthatch; from our work with landowners to that with schools and communities across our state, you’ll get a glimpse into MDC’s efforts to take care of nature, connect people with nature, and maintain the public trust (Pages 11–27).

But with this issue, we also turn now to all that lies ahead for conservation. Writer Annie Dillard noted, “How we spend our days is, of course, how we spend our lives.” So, in this New Year, let us recommit our days to doing the important work of conservation together, for the benefit of all Missourians.

Sara Parker Pauley

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Nature LAB

by Dianne Van Dien

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

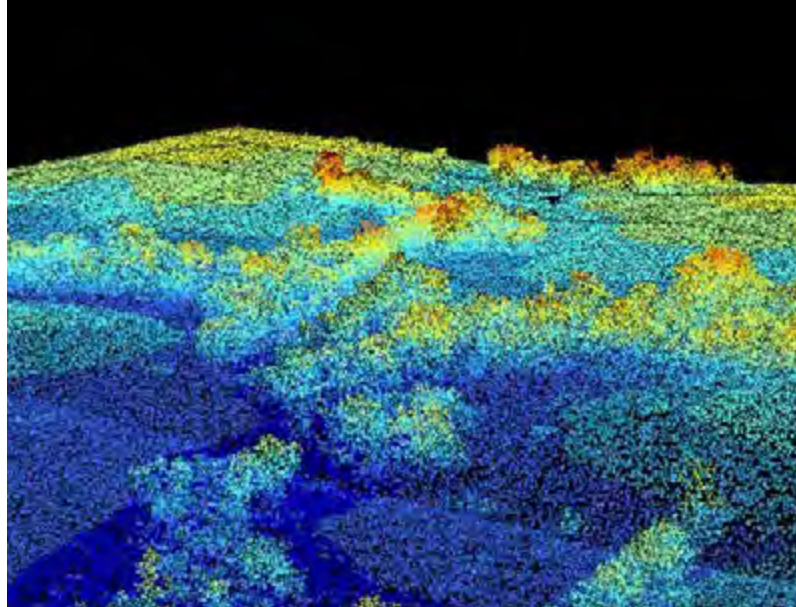
RESOURCE SCIENCE

Geographic Information Systems (GIS)

✳ “We need to be able to translate statistical data into something people can visualize and understand,” says MDC GIS Specialist Dyan Pursell, “and how we do it is through maps.” A geographic information system (GIS) makes this possible by displaying data in maps so it can be viewed and analyzed in different ways.

Invented in the early 1960s, GIS is now used across the globe in a variety of ways by a variety of industries. It is so useful for analyzing ecological data that every MDC science project includes a GIS technician on its team. Not every project ends up needing GIS, but many do. These projects range from the remote sensing of forest vegetation to understanding water flow in stream channels to recording mountain lion sightings to tracking highly pathogenic avian flu.

Although maps are a key component, GIS is much more than mapmaking. Pursell says, “GIS involves understanding geography, computer programming,



A lidar point cloud is one type of imaging made possible with GIS. Lidar (Light Detection and Ranging) collects information about a landscape from a plane by sending light pulses to the ground below and measuring the time it takes for the light pulse to bounce back to the receiver in the plane. Each speck represents a light pulse. Vegetation, elevation, and stream channels can be measured this way.

GIS helps scientists analyze and visualize data

statistical analysis, data and project management, and even a bit of psychology — you need to understand your audience to visualize the information you want to convey. Maps can often tell your story easier than words.”

In addition to building data collection applications for field staff, MDC’s GIS specialists also create custom toolkits. One example is the wetland decision management tool. It allows wetland managers to digitally watch water flow into wetland area pools so they can see how water will spread across the landscape at varying depths. This information, combined with estimates of available wetland food, provides insights for management decisions.

MDC also uses GIS for conveying information to the public, including black bear sightings and duck hunting zones. Find these and other MDC GIS projects at mdcgis.maps.arcgis.com.

GIS in Conservation at a Glance

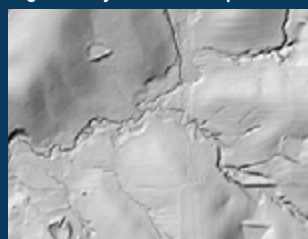
GIS is computer software that displays data with maps so users can view, manage, and analyze the data in new and different ways. MDC scientists use GIS for a wide variety of conservation projects, from showing locations of wildlife sightings to mapping data retrieved through remote sensing methods.

Land Cover Classification



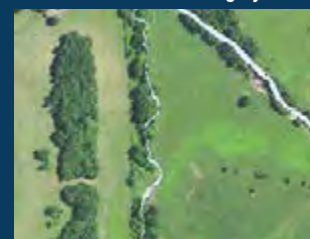
Shows cropland, grassland, shrubs, and trees

High Quality Hillshade Map



Shows elevation within 3 inches of accuracy

Active Channel Water Imagery



Shows size of stream channels and can calculate the amount of shade on a stream

In Brief

News and updates from MDC



DEER REGULATION CHANGES FOR 2023-2024 SEASONS

GROWING DEER POPULATION,
CWD DISTRIBUTION
BEHIND THE CHANGES

➔ Deer hunting regulation changes include a new firearms early antlerless portion, a new firearms CWD portion, and changes to firearms antlerless permit numbers in most counties.

"The changes to deer hunting regulations for the 2023-2024 deer season were motivated by increasing deer numbers throughout much of Missouri and in response to changes in the distribution of chronic wasting disease (CWD) in the state," said MDC

Cervid Program Supervisor Jason Isabelle. "With a growing deer population in most Missouri counties, we're increasing opportunities for hunters to harvest deer both within and outside of the CWD Management Zone next year."

MDC will offer a new firearms early antlerless portion Oct. 6-8 for 2023 in the same 100 counties open for the firearms late antlerless portion Dec. 2-10.

MDC will offer a CWD portion of firearms deer season Nov. 22-26 in CWD Management Zone counties during the 2023-2024 deer season.

MDC has also increased the number of firearms antlerless permits hunters can fill in most counties, including allowing hunters to fill a firearms antlerless permit in Butler, Carter, Scott, and Wayne counties. MDC has also increased the number of firearms antlerless permits from two to four in 82 counties.

Get regulation details and related maps of counties from the MDC website at short.mdc.mo.gov/4x3.

Detailed information on the new firearms early antlerless portion, the new firearms CWD portion, and changes to firearms antlerless permit numbers by county will also be included in the MDC *2023 Fall Deer & Turkey Regulations and Information* booklet, available starting in July where permits are sold and online at mdc.mo.gov.

MDC SETS DEER AND TURKEY HUNTING DATES

2023 Spring and Fall Turkey Hunting Dates

- Spring Youth Portion: April 1–2
- Regular Spring Turkey Season: April 17–May 7
- Fall Firearms Turkey Season: Oct. 1–31

2023–2024 Archery Deer and Turkey Hunting Dates

- Sept. 15–Nov. 10 and Nov. 22–Jan. 15, 2024

2023–2024 Firearms Deer Hunting Dates

- **New!** Firearms Early Antlerless Portion: Oct. 6–8 (in open counties)
- Firearms Early Youth Portion: Oct. 28–29
- Firearms November Portion: Nov. 11–21
- **New!** Firearms CWD Portion: Nov. 22–26 (in open counties)
- Firearms Late Youth Portion: Nov. 24–26
- Firearms Late Antlerless Portion: Dec. 2–10 (in open counties)
- Firearms Alternative Methods Portion: Dec. 23–Jan. 2, 2024

GIVE A HOLIDAY GIFT BACK TO NATURE

Don't throw that cut Christmas tree into the trash after the holidays. Recycle it! Many communities have a Christmas tree-recycling program. If not, there are several creative ways to make further use of your tree.

Place the tree in the backyard to offer cover for wildlife, or under bird feeders to provide nesting locations in the branches. Add some post-holiday treats as ornaments by coating pinecones with peanut butter and adding bird seed.

Have your tree shredded or chipped for mulch, or place cut branches over dormant plants to provide a bit of insulation during the winter and to add organic matter as the needles fall.

You can also sink the tree in a pond to enhance fish habitat by giving them a place to rest, nest, and escape predators. Multiple live trees make the best cover, so work with friends, family, and neighbors to combine efforts. Anchor the trees with concrete blocks and sink them at a depth of about 8 feet with the trees placed in a row.

If you used a balled live evergreen and your ground is still soft enough to dig, add it to your home landscape for years of enjoyment and wildlife cover.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: My granddaughter found a shed antler. What can you tell us about the age of the deer that dropped it?

➔ Antlers are not an accurate way to judge a deer's age. Though the antlers produced by an individual deer tend to increase in size each year, there is too much overlap in antler size between age classes to be able to say with certainty what the age of the animal was.

However, other information can be learned from examining a shed. For example, most of Missouri's bucks retain their antlers through hunting season. So, the fact that you found this antler is a sign this buck may have survived the hunting season and will be alive in the spring — if he survives winter, predation, or a vehicle strike. Shed antlers also can help reveal the fitness of a buck. If the base is rounded outward or convex, that's a good sign of health. If the shed antler is concave and pitted, that's a sign of injury, stress, or nutritional deficits. A healthy buck's antler is dense, well-mineralized, and feels heavy for its size. A lighter-weight antler indicates the buck was struggling to stay fit. If you find an antler

with a portion of the skull plate attached, that's an indication the animal may have suffered a brain abscess — an infection that can erode the bone around the antler's base. Also, fitter bucks hold onto their antlers longer. So, a shed lost in December or early January is not a promising sign; a shed lost in April or May suggests the animal was able to maintain good health for a longer period.

Q: Where are the best places to view snow geese in Missouri?

➔ Snow geese movements are not easy to predict. As waterways freeze and thaw, flocks of these highly mobile waterfowl move from one location to another. However, for people willing to travel, Missouri's best predictable snow goose experience is Loess Bluffs National Wildlife Refuge (NWR) in Holt County as birds seasonally move through the Midwest (short.mdc.mo.gov/4NQ).

While concentrations of snow geese can build in mid- to late-November, more birds use the refuge in the spring. As the landscape begins to thaw in mid-February, the area becomes a mecca for large concentrations of migratory birds attracted to a diversity of habitats, including lakes, farm fields, grasslands, freshwater marshes, and the nearby Missouri River.





Snow geese

Capable of hosting millions of snow geese at a time, Loess Bluffs NWR is located between two major migratory bird corridors: the Central and Mississippi flyways. For visitors, a driving route around the entire refuge offers great viewing opportunities. Snow geese begin to arrive in mid-February, peaking in mid-March.

By getting there before sunrise, birdwatchers increase the chances of seeing the geese fly out to feast on waste grain in nearby agricultural fields. The birds come and go throughout the morning. But by mid-day they can be concentrated on

the wetlands. The birds then fly out again in late afternoon and return around sunset.

Southeast Missouri is another great option for spotting snow geese during fall and spring migration. Otter Slough and Ten Mile Pond conservation areas, and the adjacent fields, often hold snow geese when they push through. But be aware: They can be there one day and gone the next. And they often roost in locations not easily accessible to humans. So, before making a long road trip, it's best to keep an eye on eBird (ebird.org) to see what birders are noticing in those areas.



Crystal Poole
CALDWELL COUNTY
CONSERVATION AGENT
offers this month's

AGENT ADVICE

Winter weather doesn't have to get in the way of enjoying nature. Hunting, fishing, hiking, and birdwatching are just some of the activities that can be enjoyed this time of year. No matter which activity you choose, staying warm is of utmost importance. To stay warm, you must stay dry. Because it holds moisture, avoid cotton. Choose instead wool or fleece. Dress in layers to help regulate your body temperature. Stay hydrated. You may not feel thirsty in cold weather, but you lose fluids through your breath and sweat, and dehydration increases frostbite risk. Tell someone where you're going and when you'll be home. Be informed on current regulations for hunting, fishing, and any area you're visiting. If you have questions or witness a violation, contact your local conservation agent.

What IS it?

Can you
guess this
month's
natural
wonder?

*The answer is on
Page 9.*



INVASIVE SPECIES

MISSOURI'S LEAST WANTED

Invasive nonnative species destroy habitat and compete with native plants and animals. Please do what you can to control invasive species when you landscape, farm, hunt, fish, camp, or explore nature.



Crown Vetch

by Angela Sokolowski

Introduced in North America in the late 1800s, crown vetch (*Securigera varia*) was planted extensively in the 1950s for erosion control along roadsides. Blooming May through August, flowers resemble a large clover, varying from white to pink or lavender. The compound leaves are 1-2 inches long with 15-25 paired leaflets. Plants can be up to 3 feet tall and spread up to 6 feet.

Why It's Bad

Crown vetch can expand rapidly, forming dense patches that shade out native plants, quickly reducing diverse habitats to weedy monocultures with little wildlife value.

How to Control It

Repeated hand pulling can eliminate small infestations if roots are fully removed. Repeated mowing, grazing, and late spring burns may reduce populations, but will not eradicate them. Infestations can be treated with herbicide.

Alternative Native Plants

- | | |
|----------------------------|-------------------------|
| ✓ Partridge pea | ✓ Goat's rue |
| ✓ Round-headed bush clover | ✓ Purple prairie clover |
| ✓ Slender bush clover | ✓ Lead plant |

Basal rosette leaves may stay green through winter, making herbicide treatment possible in the dormant season.



To learn more, visit short.mdc.mo.gov/4Nd

MDC OFFERS NEW ONLINE 'GAME' FOR HUNTER EDUCATION CERTIFICATION

Missouri hunters in need of hunter education certification now have a new interactive online offering in addition to existing hunter education courses. MDC expanded its partnership with the hunter safety course provider Kalkomey Enterprises LLC to offer a new fun and engaging, game-style learning option through the online site ilearntohunt.com.

The new immersive, scenario-based offering allows hunter education participants to have game-like experiences by creating avatars and selecting their preferred game species and geographies. The new online option also provides immediate quality feedback on real-time decision making for more than 50 in-course exercises. Preview the new online offering at short.mdc.mo.gov/4Nq.

The new online offering will place participants based on their age at the time of registration. Participants 11–15 years of age will complete the knowledge portion online but will still be required to take an in-person skills session. Participants 16 years of age and older can complete the entire certification requirement through the online course.

The cost for the new online Interactive Knowledge Course is \$39.95 paid to the online course provider. The price of the online Traditional Knowledge Course is \$24.95. The self-study guide and classroom sessions are free, along with the in-person skill session and final exam.

Missouri's hunter education course is required for any hunter born on or after Jan. 1, 1967, unless exempt. Learn more about MDC's hunter education program at mdc.mo.gov/huntereducation.

Get started on the new online Missouri hunter safety course at ilearntohunt.com/missouri.



GO PAPERLESS

Did you know you can get the *Missouri Conservationist* digitally? MDC offers the magazine as a digital subscription via email or mobile app.

An email subscription will send a notification to your inbox each month when the latest issue is ready to download. After downloading the MO Con Mag app, the newest issue of the magazine will automatically appear in the app so you can save and read it offline. Learn more about these digital options at mdc.mo.gov/conservationist.

You can always read articles online at mdc.mo.gov/conmag. Print subscriptions remain available free of charge to Missouri residents (one per household).

WHAT IS IT? MOUNTAIN LION PAW

The mountain lion is a very large, slender cat. A species of conservation concern, the mountain lion is rare in Missouri, having been extirpated since the 1920s. Occasionally, individuals wander here from other states, and you may stumble upon tracks of their enormous paws. The front and hind tracks are 3 inches long with four toes. The overall shape of the track is round and the claws do not show.





JULY 1, 2021 – JUNE 30, 2022



Annual Review

SERVING NATURE AND YOU: FISCAL YEAR 2022

NEARLY SEVEN DECADES AGO, WRITER AND biologist Rachel Carson wisely noted, “The real wealth of the nation lies in the resources of the earth — soil, water, forests, minerals, and wildlife. To utilize them for present needs while ensuring their preservation for future generations requires a delicately balanced and continuing program, based on the most extensive research.” Her words were penned nearly two decades after the Missouri citizenry expressed this same sentiment by passage of Amendment 4, which created the Missouri Department of Conservation.

Now 85 years into our existence, MDC is more resolute than ever in the importance of our work to protect and manage the fish, forest, and wildlife resources of the state; and to facilitate and provide opportunities for all citizens to



SARA PARKER PAULEY
DIRECTOR

use, enjoy, and learn about these resources. We continue to base our work in scientific rigor and research, in collaboration with partners new and old, while focusing on the highest priorities in order to achieve the maximum return.

The challenges have not diminished — as witnessed through increasing droughts, floods, habitat and species loss, and more — but neither have the opportunities to do amazing conservation work, as you’ll see throughout this report.

In this year’s annual review, we highlight just a sample of the myriad conservation efforts underway as we endeavor to take care of nature, connect people with nature, and maintain the public trust. We continue to be grateful for and rely on strong citizen engagement and support in our shared conservation mission.

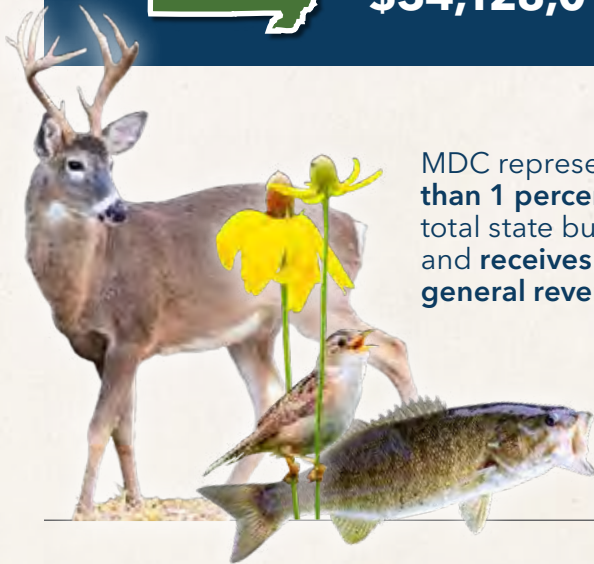
DIRECTOR PAULEY: TAYLOR LYNN PHOTOGRAPHY, CREEK: DAVID STONNER

State of Missouri Operating Budget

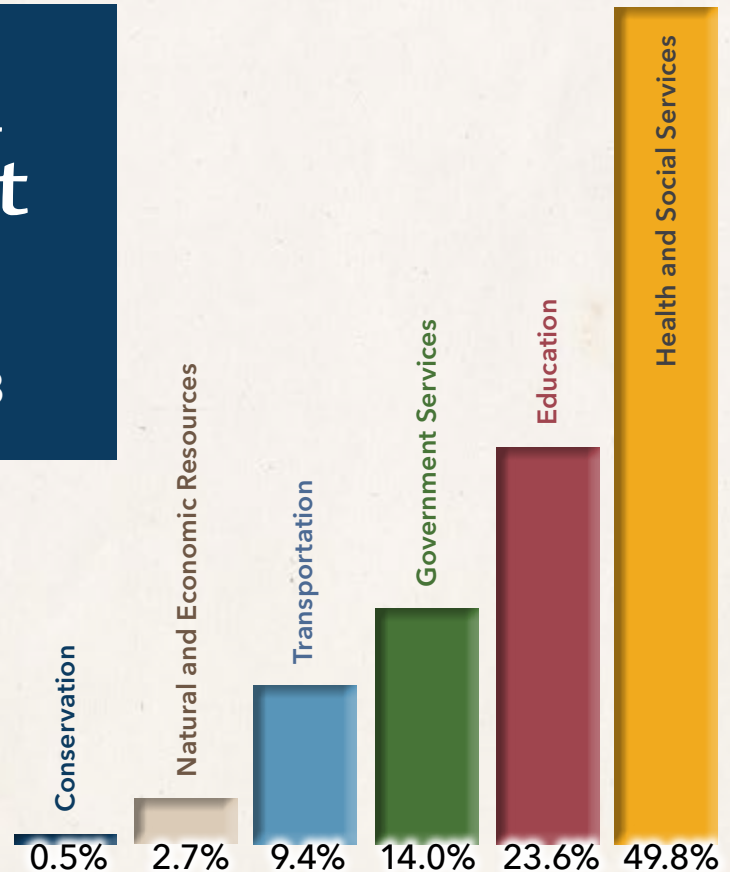


TOTAL STATE OF MISSOURI
OPERATING BUDGET FOR
FISCAL YEAR 2022

\$34,128,012,498



MDC represents **less than 1 percent** of the total state budget and **receives no state general revenue**.



MDC FY22 Actual Receipts

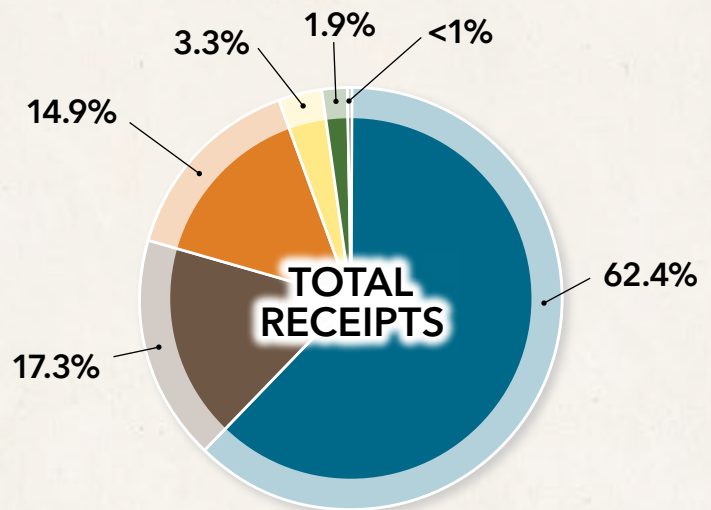
MDC gets the majority of its funding through the **conservation sales tax**. For every \$8 spent on taxable items, one penny goes to conservation.

| | |
|------------------------|---------------|
| Conservation Sales Tax | \$148,432,999 |
| Permit Sales | \$41,185,759 |
| Federal Reimbursements | \$35,330,861 |
| Sales and Rentals | \$7,896,832 |
| Other Sources | \$4,437,503 |
| Interest | \$521,710 |

MDC FY22 Actual Disbursements

Funds are distributed throughout MDC to accomplish the **state's top conservation priorities**.

| | |
|------------------------------------|--------------|
| Habitat Management | \$44,298,434 |
| Conservation Business Services | \$43,299,232 |
| Fish and Wildlife Management | \$40,904,071 |
| Recreation Management | \$22,850,521 |
| Education and Communication | \$22,637,724 |
| Capital Improvements | \$12,208,679 |
| Staff Development and Benefits | \$6,999,488 |
| County Assistance Payments | \$5,747,850 |
| Land Conservation and Partnerships | \$2,365,170 |



NOTE: Disbursements include all operating, other agency, and capital improvements from the Conservation Commission Fund. Other agency disbursements are appropriated outside the Department of Conservation operating budget. Fuel, benefits, and other disbursements were allocated to the appropriate branches.

SOURCE: Missouri Office of Administration

MDC Takes Care of Nature

WE PROTECT AND MANAGE MISSOURI'S FISH,
FORESTS, AND WILDLIFE, SO YOU CAN ENJOY
HEALTHY AND SUSTAINABLE RESOURCES
NOW AND IN THE FUTURE.

MDC ensures visitors can enjoy
Pickle Springs Natural Area, a
geological wonderland with scenic
waterfalls and cool box canyons that
harbor unusual plants and animals.

Implement Comprehensive Conservation Strategy

Conservation agencies will only meet future fish and wildlife commitments to the public within a system of healthy and connected habitats. Therefore, MDC is proactively integrating its conservation priorities with those of its partners into a common framework, which includes the identification of a prioritized network of lands and waters. The focus of the habitat-based portion of the work will be within conservation opportunity areas and subset landscapes, called priority geographies, that have specific objectives to accomplish measurable goals at a landscape level.

Missouri's plan is serving as an example across the nation

The Missouri Comprehensive Conservation Strategy (CCS) integrates the Missouri State Wildlife Action Plan, Forest Action Plan, and other conservation priorities into a comprehensive plan, meeting the requirements of both the U.S. Fish and Wildlife Service and U.S. Forest Service. The CCS also serves as a model framework, informing key conservation opportunities and prioritization in community conservation, public access to nature, climate change resiliency, and ecosystem services.

The Missouri CCS was approved in February 2022. This is the first time a state has combined these documents into a single framework. Missouri's plan is serving as an example across the nation on how conservation work is completed today and into the future.

Climate Change

MDC continues to develop a climate adaptation and resilience plan integrating climate smart planning for department operations and infrastructure. This internal effort will identify and catalog existing efforts and initiatives within MDC that have an established nexus to climate adaptation and resilience that can be strengthened, as well as identification of future efforts to create adaptive operations.

Online Landowner Prescribed Fire Training

MDC's private landowner burn workshop received a facelift in FY22. To allow participants flexibility, the course was modified from an all-day workshop to a self-paced online component and a half-day, hands-on field exercise. The online portion is offered in five units, allowing the participant to start and stop as needed. The five units cover basic fire behavior, safety, prescribed burn planning, and how to conduct a prescribed burn. The field exercise gives the participant an opportunity to assist with actual fire line preparation, igniting the burn, monitoring the prescribed burn's progress, and other critical tasks necessary to conduct a prescribed burn safely to achieve habitat management goals. While this course was originally intended for Missouri landowners, contractors who complete the training qualify for "Certified Prescribed Burn Manager" designation, allowing them to comply with House Bill 369, which became effective in August 2021. House Bill 369 is commonly referred to as the Missouri Prescribed Burning Act. To date, over 400 individuals have initiated online course work.



Indiana bats

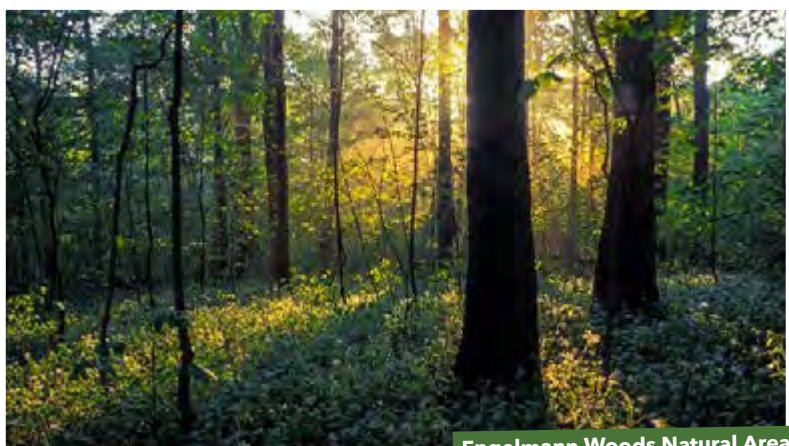
Habitat Conservation Plan

MDC, in cooperation with the U.S. Fish and Wildlife Service, has developed a Habitat Conservation Plan covering 43 million acres of bat habitat for the next 50 years. This proposal would authorize "incidental take" of five vulnerable bat species as part of a habitat conservation plan covering activities associated with forest and habitat management.

MDC proposes to avoid impacts related to habitat loss by avoiding certain activities during the bats' active maternity season. The state also will implement species habitat protection, enhancement, or restoration on 28,000 acres, including the maintenance and promotion of roost trees and foraging habitat and the protection and enhancement of caves.



Eagle Bluffs Conservation Area



Engelmann Woods Natural Area

Healthy Forests Providing Wildlife Habitat

In FY22, MDC focused on the care and management of forests and woods held in public trust for Missourians. Habitat management work assured forest health and provided a broad suite of forest conditions to meet a wide variety of needs for birds and other wildlife. Forest surveys were completed on conservation areas and forest management plans were developed. Using the tree data collected, work was implemented, including the control of invasive plants, harvest of wood products, and planting and thinning of trees. Use of contractors to complete forest surveys and to harvest timber was critically important in allowing MDC to complete all work in a timely and cost-efficient manner.

To elevate the safety of timber harvesters working on MDC lands, a new personal protective equipment (PPE) cost-share program was initiated in partnership with the Missouri Forest Products Association. This program helps timber harvesters secure PPE, including hard hats, eye and ear protection, and chainsaw chaps. In addition, a web-based reporting system was designed and launched to capture the location of work accomplished.

National Hydrography Dataset and National Wetlands Inventory

Statewide updates to the National Hydrography Dataset and National Wetlands Inventory continue. MDC funds were combined with the Missouri Department of Natural Resources and the Missouri Department of Transportation to purchase updated leaf-off imagery. MDC also collaborated with several other partners to create a tool designed to map changes in wetland inundation.

The wetland web series highlighted the status and direction of three foundational wetland assessments — bottomland functional assessment, life-history project, and wetland social surveys — and was shared with conservation partners. A *Wetland Planning Initiative* webpage was developed with the Wetland Strategic Plan and Implementation document. Three articles on wetlands also ran in the *Missouri Conservationist* in 2022.

Coordination with partner regulatory agencies continued on water quality topics.

Missouri hosted the Instream Flow Council biennial meeting and featured information about Missouri projects on ecological flows.



Feral Hog Elimination

The Missouri Feral Hog Elimination Partnership is made up of agencies and organizations that are committed to total elimination of feral hogs from Missouri's landscape. In 2020, the partnership established a unified Incident Command System to manage feral hog elimination efforts in the state. Since 2016, the partnership has eliminated feral hogs from 269 watersheds in the state. These watersheds encompass approximately 6.7 million acres of land, a decrease of 60 percent of the land previously occupied by feral hogs in Missouri. During 2021, the partnership removed a total of 9,857 feral hogs from Missouri's landscape. The highest number of feral hogs were removed from Iron County at 1,940 hogs, followed by Wayne County at 1,329 hogs, and Reynolds County at 1,268 hogs. Aerial elimination efforts were increased in 2021 with a total of 193.5 hours conducted over the course of the year, resulting in the removal of 1,954 feral hogs. Partnership staff scouted almost 3.3 million acres for feral hog damage and signs of hogs and assisted 1,308 private landowners in 2021. Anecdotal field reports from trappers indicate feral hogs are becoming rarer on the landscape and sounder sizes are decreasing, suggesting elimination efforts are having success in reducing the population of feral hogs in the state.

9,857 feral hogs were removed from Missouri's landscape in 2021

In fall of 2021, MDC hired nine new full-time feral hog trappers. Now at full staff, a total of 48 full-time trappers will be deployed across the state. Also in 2021, four feral hog outreach specialists were hired as part of the University of Missouri's Extension Program to act as liaisons for the partnership. Each outreach specialist was tasked to work in counties impacted by feral hogs, and they are stationed in Ironton, Ava, Salem, and Poplar Bluff. Specific goals of the Extension Program, complimentary to efforts of the partnership, include establishing relationships with landowners in strategic locations, establishing a quarterly newsletter to improve communication, engaging local organizations (county Farm Bureaus, local Cattleman's Associations, county commissions, soil and water conservation districts, etc.), conducting surveys and collecting data associated with feral hog damage, connecting landowners with trappers, and conducting landowner meetings and workshops. In 2021, the outreach specialists assisted in signing up an additional 39,000 acres of private land that we were able to include in aerial operations.



K-9 Waylon

K-9 Unit

Since the kick-off of MDC K-9 Unit in 2021, the dogs and their handlers have provided 248 programs with a total of 11,834 program participants, and they have been involved in 134 deployments. Of those deployments, 25 of them were classified as being detection deployments while the other 109 were classified as patrol deployments. The K-9 teams have been a valuable addition to the department and have been successful in helping find evidence from numerous poaching incidents around the state, including cases for taking turkey and deer in closed season, shooting from the roadway, and trespassing.

Black Bear Hunting

Missouri's first black bear hunting season occurred in October 2021 and resulted in a total harvest of 12 bears. The limited and highly regulated hunting season was established to provide opportunity for Missourians to participate in the sustainable harvest of this valuable natural resource. Conservative permit and harvest quotas were established for the state's three Black Bear Management Zones to provide for sufficient hunter opportunity while allowing for continued growth of the bear population. Hunters are allowed to use firearms or archery, but the use of bait or dogs is prohibited.

Smallmouth Slam

June 2022 marked the beginning of MDC's latest angler recognition program — the Smallmouth Slam. MDC partnered with the Missouri Smallmouth Alliance to offer this program based on the wildly popular Blue-Ribbon Trout Slam. The Missouri Smallmouth Slam honors anglers who can catch a smallmouth bass in at least six of 12 special management areas. Catch a smallmouth bass in more than six of the designated areas and your level of achievement goes up. Participants can choose to have their successes listed on the MDC website.





Paddlefish Harvest Regulation Changes

Paddlefish have historically been valued by both sport and commercial anglers, but interest in paddlefish has increased recently. Jaw bands were used to tag 9,568 paddlefish in the Mississippi and Missouri rivers and Missouri's three large reservoirs (Lake of the Ozarks, Harry S. Truman Reservoir, and Table Rock Lake). Based on exploitation estimates and to protect immature paddlefish from harvest, the statewide length limit was increased to 32 inches for rivers while reservoirs remained at 34 inches. To alleviate concern over bycatch mortality due to elevated water temperatures, a commercial paddlefish harvest season has been established from Nov. 1 to April 15. MDC developed a definition of snagging in the *Wildlife Code of Missouri* and added Table Rock Lake to the regulation that no person shall continue to snag after taking a daily limit of two paddlefish.

Catfish Study, Management

Studies of blue catfish and flathead catfish in the Missouri and Mississippi rivers were prompted by concerns from some anglers about overharvest. However, fisheries research indicated that current management approaches support healthy populations and sustainable fisheries. While regulation changes are not necessary to prevent overfishing, opportunities to manage these fisheries to better meet the desires of those who prefer to catch larger fish were identified. An angler questionnaire and public comment period were offered last summer to determine Missourians' preferences associated with catfish management. Public input indicated that catching catfish to eat is more important than catching trophy-sized catfish and that many anglers preferred to keep smaller catfish. While some anglers are interested in catching trophy-sized catfish and implementing more restrictive harvest regulations, that sentiment was not overwhelming, and public comments largely supported no change. Ultimately, no regulation change was recommended.

Hellbender Recovery

Great strides have occurred with the propagation and restoration efforts for the Ozark hellbender and eastern hellbender in Missouri. MDC, along with the Saint Louis Zoo's Ron and Karen Goellner Center for Hellbender Conservation and support from other agencies and private citizens, work in consort to keep Missouri's largest, aquatic salamander from extinction. Due to drastic declines in Ozark hellbender numbers, captive propagation became a priority in the long-term recovery of the species, especially augmenting populations into their natural habitat — the Ozark aquatic ecosystem.

Continued breeding of Ozark hellbenders in artificial streams occurred at the zoo, resulting in 762 hatchling hellbenders in the autumn of 2021. Zoo-breeding of the Ozark hellbender has been successful in 10 of the past 11 years. In addition, MDC staff

collected hellbender eggs from five Ozark rivers, resulting in 571 hatchlings that are being raised at the zoo. Currently, the zoo is rearing over 2,000 larvae and juvenile hellbenders obtained from eggs collected in the wild and eggs obtained from zoo-breeding in previous years. During the summer of 2021, 835 Ozark hellbenders and eastern hellbenders raised at the zoo were released in their native Ozark rivers. These hellbenders are being monitored to determine the success of zoo-reared hellbenders in the wild. MDC also contributed to a substantial renovation of the breeding facility at the zoo, which will increase their capacity to rear hellbenders and improve cooling efficiency of the facility. These achievements will not only buy time to further address the decline of the species but will likely be the "safety net" needed to save this unique, native salamander of the cold-water rivers of the Ozark Highlands.



Ozark hellbender



Eastern hellbender

835 Ozark and eastern hellbenders raised at the zoo were released in their native Ozark rivers during the summer of 2021

Brown-Headed Nuthatch Restoration

During the second year of the brown-headed nuthatch restoration effort, 56 birds were moved in August 2021 from Arkansas to two sites in the Mark Twain National Forest pineries south of Fremont. Between 2020 and 2021, a total of 102 nuthatches were released in Missouri. Partners at the University of Missouri, U.S. Forest Service, U.S. Fish and Wildlife Service, and MDC have conducted surveys for survival estimation across the release area monthly since November 2020. Additionally, nests were located and monitored in spring 2021 and 2022. Some breeding pairs in 2022 included unbanded birds, evidence of breeding in nuthatches fledged last year in Missouri. Future work includes continued monitoring and population viability analyses to inform whether future relocation of birds is needed to further supplement this small, restored population.



102 nuthatches
were released in Missouri
between 2020 and 2021



Brown-headed nuthatches

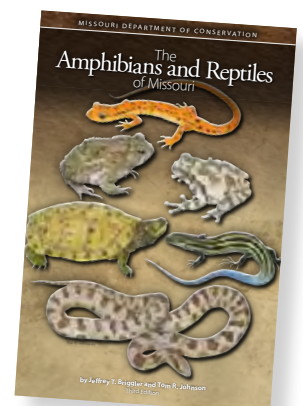


Rough greensnake

The Amphibians and Reptiles of Missouri

Whether you study herpetology or are just interested in learning more about these secretive and often misunderstood groups of animals, *The Amphibians and Reptiles of Missouri* is a perfect book. Updated and expanded for the first time in more than 20 years, this 522-page guide by Jeffrey T. Briggler (state herpetologist) and Tom R. Johnson (retired state herpetologist) provides a thorough update of the knowledge and taxonomy of amphibians and reptiles in Missouri. The book provides a user-friendly layout on the description, distribution, habits and habitat, breeding, and interesting remarks for 118 currently recognized salamanders, frogs and toads, turtles, lizards, and snakes.

This book is nicely complemented by numerous photographs and illustrations. There are many updated and high-resolution color photographs assisting with identification within each species account, as well as the inclusion of many of the species preferred habitat. As with the previous editions of this book, Johnson's artwork provides esthetic appeal rarely found in state guides of amphibians and reptiles. It is available for purchase at most MDC nature centers, online at **mdcnatureshop.com**, or by calling toll-free 877-521-8632.



Turkey Research

Nest Success and Poults Survival

MDC's Wild Turkey Management Program is working with the University of Missouri to determine the primary causes for declining production in Missouri's turkey population in northern Missouri. The project will look at how weather, landscape characteristics, predator densities, and invertebrate abundance and diversity affect nest success and poult survival in northeast Missouri. The project aims to identify what habitats are most important to turkeys during the brood-rearing period and in which habitats turkeys and predators are most likely to interact. Since these factors are often studied in isolation, they provide an incomplete understanding of how they interact to influence production. The results of this project will provide a more comprehensive understanding of the dynamics influencing turkey production and abundance, further improving our communication with concerned stakeholders. The results would also inform habitat management efforts on public and private land.



Project results will provide a more **comprehensive understanding of turkey population dynamics**

Regional Harvest Rate Estimation for Wild Turkeys

MDC's Wild Turkey Management Program is working with the University of Montana to develop a statistical population reconstruction (SPR) model for each of the wild turkey monitoring units (TMU) to monitor turkey population demographics. SPR models can use data streams — harvest data and brood survey results — to estimate vital rates and abundance but need additional data to decrease the uncertainty around those estimates. For the Ozark Border and Union Breaks TMU to be properly fit using an SPR model, a more accurate estimation of harvest rates for adult and juvenile male are needed. SPR models are more defensible when questions about turkey management are posed by stakeholders.

The goals of this project will be accomplished by banding 120–160 (as close to 50–50 adults to juvenile as possible) male turkeys in fiscal years 22–24. Captured males will be fit with a leg band, 60 percent of which are worth \$100 if the hunter reports their harvest. Using this mark-recapture method, adequate levels of precision for the SPR model output should be achieved.

NORPADOL PHOTONG



MDC conducts a number of wild turkey research projects, and the data collected from these studies informs management and hunting decisions.



MDC Connects People with Nature

WE PROVIDE PLACES FOR YOU TO ENJOY NATURE AND OPPORTUNITIES FOR YOU TO LEARN ABOUT AND DISCOVER NATURE.



MDC's Urban Fishing Program has expanded close-to-home fishing opportunities for residents living in cities for more than 50 years.



Expanded Bicycling and Rock-Climbing Opportunities

Cyclists and rock climbers can now get outdoors and enjoy nature on MDC conservation areas. A new MDC bicycle regulation went into effect Feb. 28, 2022, that allows bikes and some types of electric bicycles (e-bikes) on multi-use bicycle trails and most service roads. Service roads are pathways used by MDC vehicles for maintenance purposes. Learn more about biking on conservation areas at short.mdc.mo.gov/Zr9.

A rock-climbing bluff is now open at Rockwoods Reservation in St. Louis County. A dozen climbing routes were developed in partnership with the BETA Fund, a local organization of rock-climbing enthusiasts whose mission is to protect and conserve outdoor resources in the Midwest for recreational rock climbing. Learn more about rock climbing at Rockwoods Reservation at short.mdc.mo.gov/4Tv.



Kansas City Green Career Corps

In FY22, MDC entered into an agreement with Heartland Conservation Alliance (HCA) to pilot a green career corps in Kansas City. The Nature Action Crew (NAC) is focused on young, underrepresented adult populations in the Kansas City area. A total of five young adults were hired to form the NAC. The NAC program has four main goals:

1. Fill a need for trained landscapers that can work with native plants in the Kansas City Metro Area.
2. Provide diverse opportunities for careers in conservation for underrepresented Kansas City residents.
3. Work on mutually beneficial habitat projects in the Blue River Watershed.
4. Enhance the connection of underrepresented populations to nature.

HCA and their partners developed a training curriculum for the NAC members so they could work on a wide range of projects throughout the Kansas City area. These projects include wildlife-use monitoring, water quality monitoring, prescribed burning, invasive species removal, outdoor education, outreach events, planting native vegetation, and leading community workdays. This has been a great partnership to further our efforts in connecting Missourians to nature and the concept has expanded to reach other communities in the state.



Members of the Nature Action Crew work on landscaping at the MO Hives site in Kansas City. Native plantings have been incorporated into the landscaping to benefit pollinators.





Volunteers work on repotting trees in St. Louis County. In 2021 alone, Missouri Forestkeepers Network members logged nearly 19,000 volunteer hours.

The Missouri Forestkeepers Network Celebrate 25 Years

The Missouri Forestkeepers Network celebrated its 25th anniversary in FY22. The program was launched in 1996 and attracted 731 charter members. Today, the network has grown to serve more than 3,000 members throughout much of the state. These members are everyday citizens who are turning a critical and caring eye to the state's forests while taking a hands-on approach to caring for natural resources.

Since the program's inception, the network has been coordinated by Forest ReLeaf of Missouri and MDC. The initial goals of forestry education and state-wide outreach, along with the mission of the program, "to develop a network of informed citizens working to conserve, sustain, and enhance Missouri's urban and rural forest resources through volunteerism, advocacy and management," still hold true today.

Over the years, the Forestkeepers Network members have contributed more than 250,000 volunteer hours, valued at \$7.5 million, with members logging a remarkable 18,934 volunteer hours across the state in 2021 alone. Those hours were spent caring for countless trees, advocating for trees, participating in a strange and unique tree hunt, surveying the tree nut crop in counties, teaching in formal and informal classrooms, and countless other initiatives. Activities are underway to chart the path for the next 25 years.

Discover Nature Schools

Two new and innovative Discover Nature Schools curricula are now available. The curricula incorporate the latest teaching strategies and practices. Teachers in kindergarten and first grade can use grade-specific teacher and student guides to meet all state and national science standards for those grades. The online *Teacher Portal* includes digital materials to share with students. In addition, trained classroom teachers can receive transportation grants for field experiences and teacher trunks for hands-on learning.

2021 Conservation Partners Roundtable

MDC hosted its fifth annual Missouri Conservation Partners Roundtable in October 2021. With a theme of "Connected Like Never Before," this virtual event built on recent gains in getting people outdoors during the pandemic. More than 340 partners (representing 163 organizations), students, and MDC staff participated. An opening plenary session featured keynote speaker Martha Williams, U.S. Fish and Wildlife Service, along with a panel discussion involving five nationally known speakers. Fifteen concurrent sessions were held on topics that fit the conference theme. The event concluded with a question-and-answer session with MDC leadership.

Community Forestry Funding

In FY22, \$500,000 in cost-share funding was provided to communities throughout Missouri to conduct community forestry projects. The cost-share is used to fund community tree inventories, removal or pruning of hazardous trees, tree planting, training, and education. In northeast Missouri, Moberly Parks and Recreation used these funds to install four interpretive signs at Rothwell Park. The signs were installed to help visitors identify 20 different tree species along the Paul Walker Trail Loop, which leads to the park's Meditation Garden. This park receives tens of thousands of visitors each year. More information on funding for communities can be found at short.mdc.mo.gov/4Uu.

Missouri Master Naturalist Program

Master Naturalist volunteers made considerable additions to citizen science efforts in FY22 with members of all chapters contributing data to various surveys. Information was reported on birds, butterflies, frogs, furbearers, and lady slippers.

- With several birders among their ranks, Boone's Lick Chapter members contributed nearly 1,000 hours of volunteer service, collecting data for bird conservation efforts.
- Members of the Hi Lonesome Chapter also made a significant contribution to bird conservation efforts by monitoring 36 bald eagle nests.

Improving monarch and pollinator habitat is a high priority for the Master Naturalist Program. Leading efforts with local conservation partners, volunteers implemented a dozen new pollinator planting projects, adding over 1,100 new milkweed plants to Missouri's landscape.

- The Loess Hills Chapter has set a challenge for themselves to plant 10,000 milkweeds at the Loess Bluffs National Wildlife Refuge over 10 years. In the most recent year, their fourth, Master Naturalists planted 1,000 milkweeds at the refuge.

Additionally, Master Naturalist volunteers connect people to nature through numerous outreach and education programs.

- Members of the Mississippi Hills Chapter connected a youth empowerment group to the sport of angling through a Discover Nature — Fishing event.
- The Great Rivers Chapter partnered with the Green Center to engage youth in nature-oriented activities through after-school programs, summer camp, and outdoor classroom projects.
- The Lake of the Ozarks Chapter worked with community partners to co-sponsor an eagle festival, which brought people of all ages outdoors to experience and learn about nature during the winter season.



Showy lady slipper



Monarch butterfly



Bald eagle

National Archery in the Schools Program

The Missouri National Archery in the Schools Program (MoNASP) has grown immensely since its inception in 2006, which started with nine schools participating. To date, the department has provided training and grants to 977 schools to support implementation of the program. The teachers and partners who support the day-to-day operation of the program across the state have helped make Missouri's program nationally recognized. Missouri holds the second largest state tournament in the nation, with over 3,000 bull's-eye archers and 1,000 3-D archers. In recent years, Missouri schools have also become a dominant force at the national level, including a first-place team and several individual winners in 2022.



Teachers and partners across the state help make Missouri's program nationally recognized



Missouri Stream Team Program

Stream Team volunteers serve as stewards for Missouri's 110,000 miles of flowing water and do hands-on projects, such as litter pickup, water quality monitoring, storm drain stenciling, and streamside tree planting. The program is a partnership between MDC, the Conservation Federation of Missouri, and the Missouri Department of Natural Resources.

In FY22, Stream Teams throughout the state reported the following activities:

10,975

trees planted

58

habitat improvement projects

318

water quality monitoring trips

194

tons of trash removed from Missouri waterways

56,263

hours dedicated to protecting Missouri streams



During the past fiscal year, Stream Teams participated in several projects and activities, including the Castle Point Clean-up and the Show-Me Snails Project. The Stream Team Program partnered with the St. Louis Economic Development Partnership, Missouri American Water, Urban League of Metro St. Louis, St. Louis County Police Department, and many others to participate in the "Clean Up, Build Up" project to help clean up the trash, debris, and overgrowth of invasive species in the underserved community of Castle Point in North St. Louis County. Several 40-yard dumpsters were filled with debris by 100 volunteers in May 2022.

The Show-Me Snails project kicked off its third year of citizen engagement to collect aquatic snails for identification. This ongoing project will help develop future water quality criteria and expand existing snail distribution records for the state of Missouri. Last year, 77 Stream Team volunteers registered to help with Show-Me Snails, and 148 aquatic snail samples were submitted for identification by MDC's Science Branch staff.

Pathways to Relevancy Project

MDC's Relevancy Branch is leading an effort to help the agency better understand and serve the conservation-related interests of all Missourians. MDC recognizes that organizational change is necessary to fulfill the public trust responsibilities of its conservation mission — To protect and manage the fish, forest, and wildlife resources of the state; and to facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources. Building on national efforts to increase conservation relevance for everyone, in FY22, MDC convened a cross-program, multilevel Relevancy Project Team that invested in a planning process informed by social science inquiry focusing on geographies and population segments that historically have been underserved by the agency. Grounded in MDC's strategic plan, the Relevancy Project Team identified seven relevancy goals that will serve as the foundation of MDC's work to ensure conservation is accessible to all Missourians.



American bumblebee



MDC Staff Volunteers

Connecting people to nature is what volunteers at MDC's shooting ranges and outdoor education centers, nature centers, and visitor centers do daily. In FY22, these volunteers contributed 38,200 hours assisting staff with programs and activities to engage people of all ages with nature-focused experiences. In the past fiscal year, volunteers helped reach new audiences through virtual programs, which included adapting place-based programs for youth to a virtual format and engaging participants in new ways. Volunteers embraced the "one-health" concept and helped deliver programs with a focus on nature as a healthy lifestyle boost. Several volunteers celebrated 20 years of service with the department and shared their wealth of experience mentoring new volunteers.

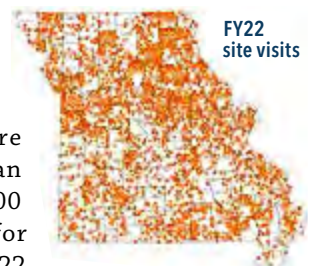
Volunteers
contributed
38,200 hours
in FY22

Missouri Bumblebee ATLAS

Since 2020, the Missouri Bumblebee ATLAS survey has been conducted by more than 130 volunteers to determine bumblebee species distribution in Missouri. Over 2,300 bees have been collected and identified and habitat information recorded. The ATLAS has given us and our partners valuable insight into bumblebee nectar plant preferences and habitat needs. The bumblebee species of most concern in Missouri rely almost exclusively on native plants for nectar and pollen. In addition, they are found mostly where there is a diversity of blooming native plants. Information gained is helping design better plantings for pollinators. Bumblebees are not only important native pollinators, but the same habitat they use are also valuable for species like bobwhite quail and declining grassland birds. Sponsoring partners include the University of Missouri, The Xerces Society, and Quail Forever.

Landowner Assistance

More than 27,000 Missourians received technical and financial support to manage their land for the benefit of fish, forests, or wildlife, including over 7,000 on-site visits with landowners and communities. Approximately \$2 million was provided to private landowners for habitat improvement through our Landowner and Community Assistance cost-share program, while an additional \$900,000 was provided for communities in FY22.



MDC Maintains Public Trust

WE WANT YOU TO BE CONFIDENT THE FINANCES DEDICATED TO MISSOURI CONSERVATION ARE USED WISELY, AND DECISIONS CONCERNING MISSOURI'S FISH, FORESTS, AND WILDLIFE ARE GUIDED BY THE BEST AVAILABLE SCIENCE.



MDC's staff uses science and research to set hunting dates, so citizens can enjoy our natural resources.



Retaining a Healthy Workforce

The Conservation Commission approved increased commission contributions toward active employee health insurance premiums from 68 percent to 85 percent, effective Jan. 1, 2022. This action was taken to improve MDC's competitiveness in an aggressive hiring market and to expand on total rewards for existing staff resulting in improved retention.

Talent acquisition in collaboration with staff statewide filled a record number of personnel transactions in FY22. During this unprecedented time, MDC maintained a 94 percent retention rate, and continued providing quality services and programs to our constituents.

Digital Bill Processing

Before the COVID pandemic and implementation of remote working, the MDC Payables team leveraged 100 percent paper documents for bill processing. The first iteration of digital bill processing was implemented within five business days, as an immediate reaction to COVID shutdown. The initial measures taken allowed for bills to be processed but was not an ideal long-term approach. MDC Payables worked with MDC Information Technology staff and the Filebound software vendor to develop a new workflow. Filebound is a web-based system MDC already used for document image storage, and it provided the necessary functionality to create workflows for managing invoice submissions and payment. MDC Payables and Purchasing teams travelled throughout the state to MDC regional offices to train staff on the new workflow. MDC is now processing

**MDC is now
processing documents
almost 100%
electronically**

In FY22, MDC retained 94 percent of its workforce and continued to provide quality programs, like this fly-tying clinic, to Missourians.

documents almost 100 percent electronically and more consistently stay within the team's paid within five business days goal. This has led to stronger relationships with our conservation partners and vendors as well as allowing for successful distributed work for our team.

Continuous Improvement Recognition

In May, MDC received Commitment Level recognition for Performance Excellence from the Quality Texas Foundation Regional Program. This recognition is for dedication and commitment to continuous improvement by completion of the Malcolm Baldrige Excellence Framework. The Baldrige Excellence Framework is a set of nonprescriptive criteria to help organizations of all types and sizes improve performance and get sustained results. The framework helps the department identify strengths and opportunities in the areas of leadership, strategy, customers, measurement, analysis knowledge management, workforce, and operations. The recognition is acknowledgment of the department's commitment to a culture of continuous improvement and the persistent pursuit of excellence. ▲

Get Outside

in JANUARY



→ Ways to connect with nature

Tap into Winter Fun

Tap into a sugar maple tree and make your own maple syrup! The best time to tap for most of Missouri is usually middle to late January or early February. Young sugar maples often retain their dead, dried leaves throughout the winter instead of shedding

them in the fall, so it's easy to spot them as you look through the winter woods. For more information on maple sugaring, visit **short.mdc.mo.gov/4N4**.



Sugar maple



Hike and Hunt

From the last of December to mid-February, after the rut, white-tailed deer bucks shed their antlers. After the antlers fall to the ground, they are gnawed and consumed by rodents and rabbits for their minerals and protein. Get your family and friends together and head out for a hike and hunt for these discarded treasures.

Take Cover

Build an out-of-the-way brush pile. Not only is it a tidy way to clean up your brush, but wildlife will appreciate the cover during the cold winter weather.



Natural Events to See This Month

Here's what's going on in the natural world.



Ozark witch-hazel blooms.



Horned larks flock in open fields.



Comma butterflies appear on warm days.

ST. LOUIS REGION

Birds: Owl Prowl

Friday • Jan. 13 • 6:30-8 p.m.

St. Louis Regional Office/Busch Memorial Conservation Area
2360 Highway D, St. Charles, MO 63304

Registration required by Jan. 12 at short.mdc.mo.gov/4No
or by calling 888-283-0364.

All ages.

Who's that hooting it up each January evening? Owls, that's who. You will learn what makes them such effective nighttime hunters and why they hoot so much this time of year. We will then take a walk on the Short Loop of the Fallen Oak Trail and see if we can entice any owls to fly in and talk to us. Dress appropriately in warm clothing (including gloves) since we will be outside part of the time. Please bring flashlights. Participants will meet in the classroom at the Busch Visitor Center.

Catch a Rainbow

Cast your line and catch a rainbow! MDC stocks rainbow trout in certain lakes and streams in winter. If you're interested in winter fishing but for other species, Missouri has you covered. Bass, crappie, walleye, and catfish are also popular for anglers during the winter months. For more information, visit mdc.mo.gov/fishing.



Rainbow trout

Bark at the Moon

Red fox mating season peaks in January and February, as does their nocturnal barking. If you are near a forested area or open area at night, you are sure to hear them.

Red fox



Call Before You Cut

5 REASONS TO CALL BEFORE YOU CUT

- ✓ Learn if harvesting is right for you and your woods
- ✓ Harvest the proper trees to ensure a healthy forest
- ✓ Find a trained logger for the job
- ✓ Maximize timber sale income and save \$\$\$ on taxes
- ✓ Ensure your overall satisfaction with the timber harvest

Request a free informational packet about working with a professional forester to take care of your woods.

**callb4ucut.com
877-564-7483**

Places to Go

SOUTHEAST REGION

Holly Ridge Conservation Area

Multiuse trails inside a multiuse area

by Larry Archer

✳ While more than 7 miles of trails in Holly Ridge Conservation Area (CA) are classified as “multi-use,” meaning that bicycling, horseback riding, and hiking are allowed, the term could be used generally for the entire area.

In addition to the multiuse trails, the 1,000-acre conservation area, located northeast of Dexter in southeast Missouri’s Stoddard County, also boasts additional hiking-only trails, two natural areas, an archery range, and two fishing ponds, providing plenty of opportunity for those wanting to beat the winter blahs with some outdoor fun.

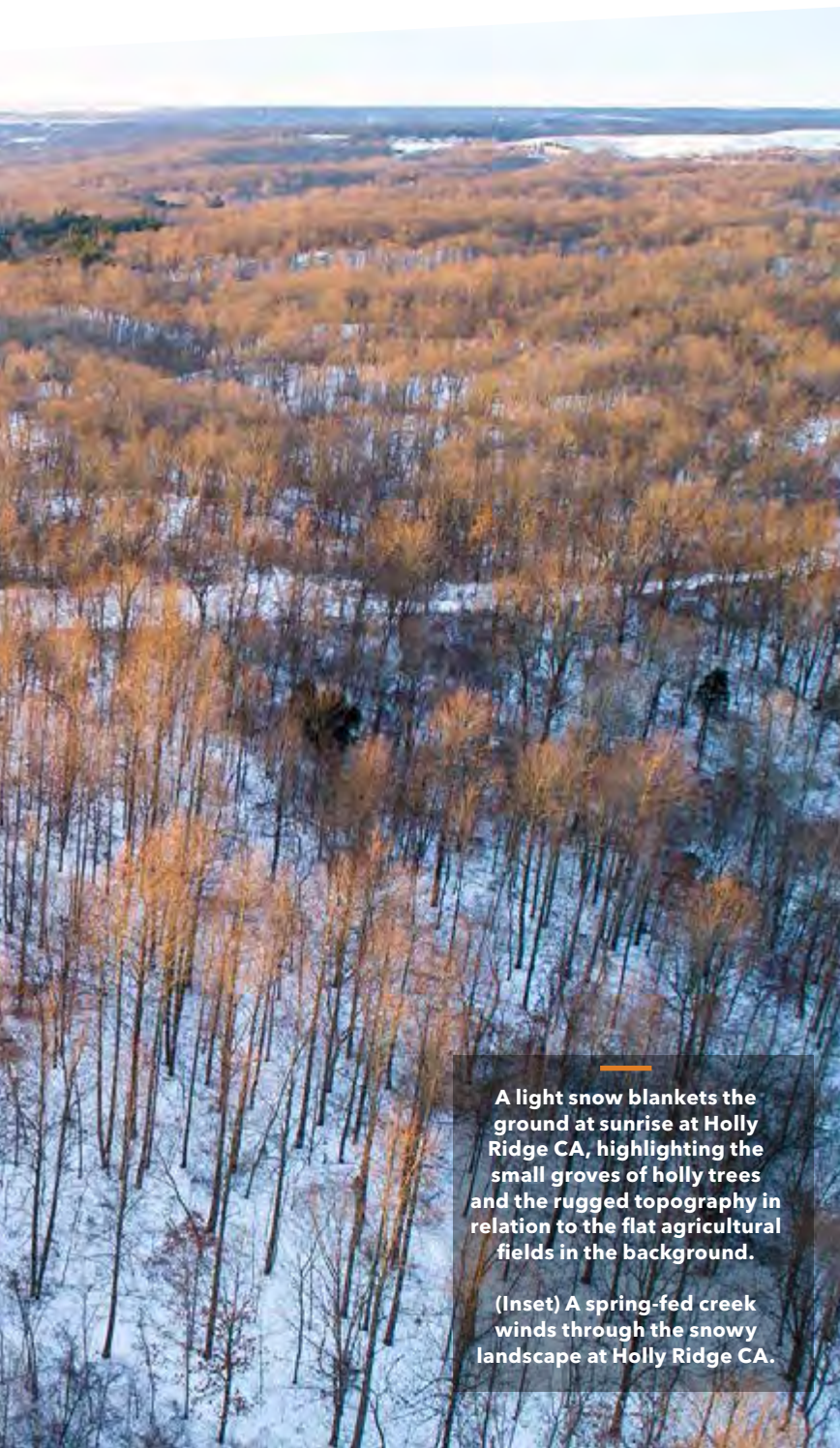
Holly Ridge CA sits atop Crowley’s Ridge, a geographic formation that rises to 250 feet above the surrounding Mississippi River lowlands. From its position on the edge of Crowley’s Ridge, the area offers panoramic views of the Bootheel flatlands to the east.

The area is home to both Beech Springs and Holly Ridge natural areas. Between the two, visitors can experience forests more likely to be found in Arkansas and Tennessee than in the nearby Ozarks. Keen-eyed visitors will also spot seeps and rare plants, including the American holly that inspired the area’s name.

If one is seeking more than views, Holly Ridge CA also hosts a static archery range with 10-, 20-, 30-, and 40-yard targets, and a broadhead target.

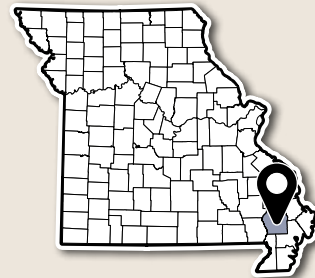


DAVID STONNER



A light snow blankets the ground at sunrise at Holly Ridge CA, highlighting the small groves of holly trees and the rugged topography in relation to the flat agricultural fields in the background.

(Inset) A spring-fed creek winds through the snowy landscape at Holly Ridge CA.











HOLLY RIDGE CONSERVATION AREA

consists of 1,000 acres in Stoddard County.
From Bloomfield, take Route E east, then County Road 517 south 2 miles.

36.8513, -89.9208

short.mdc.mo.gov/4GT 573-290-5730

WHAT TO DO WHEN YOU VISIT

-  **Archery** Static target archery range with 15-, 20-, 30-, and 40-yard targets.
-  **Biking** Multiuse trails totaling 7.4 miles open to biking, hiking, and horseback riding. Closed to bikes and horses during firearms deer season and spring turkey season.
-  **Birdwatching** The eBird list of birds recorded at Holly Ridge CA is available at short.mdc.mo.gov/4GS.
-  **Camping** Individual campsites; open camping.
-  **Fishing** Black bass, catfish, crappie, sunfish.
-  **Hiking** An additional 1.5 miles of hiking-only trails.
-  **Hunting Deer and turkey** Regulations are subject to annual changes. Refer to MDC's regulation page online at short.mdc.mo.gov/Zjw for regulations.
Also **bear, dove, quail, rabbit, and squirrel**
-  **Trapping** Special-use permit required.

WHAT TO LOOK FOR WHEN YOU VISIT



Snow goose



Coyote



Great horned owl



Northern shoveler

Wild Guide



Brown Creeper

Certhia americana

Status

Common migrant

Size

Length: 5¼ inches

Distribution

Statewide migrant



Did You Know?

In January, if and when a cold snap occurs, many creepers apparently leave the upland forests and move to forests and second-growth woodlands in valleys and floodplains of streams and rivers. In the southern third of the state, creepers are more abundant during winter and are present in most forested areas.

Brown creepers are streaked with black, gray, and brown with white underparts. Their tails are stiff, like woodpeckers, which helps in climbing trees. Their bill is long and downcurved. The song is a high-pitched series of lispy whistles, see-see-see-sese-see or *tsi-ti-whe-tu-we*, also high-pitched *tsee* or *tsi* calls. In spring and fall, creepers are usually present in most woodlands and forests and are relatively common. A few remain through winter.



LIFE CYCLE

Brown creepers nested more abundantly in Missouri when the state had large bottomland forests. Today, they are mainly reported during breeding season from the island forests of the upper Mississippi River. Nests resemble hammocks strung between the trunk and a loose piece of bark on a dead tree. Five to six eggs incubate for 13-17 days, and the nestlings fledge 14-20 days after hatching.



FOODS

Creepers forage for insects, spiders, and nuts in the bark of trees. Starting at the base of a medium or large, rough-barked tree, a creeper spirals upward around the trunk, searching for hidden insects. Once finished, it flutters rapidly to the base of a nearby tree and repeats the process.



ECOSYSTEM CONNECTIONS

Brown creepers keep populations of spiders and insects in check, especially those that damage trees, limiting their impact on forests, and helping our forests stay healthy. In turn, snakes, mammals, and other birds eat brown creepers.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Keep:
May 28, 2022–Feb. 28, 2023

Nongame Fish Giggling

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2022–Feb. 15, 2023

Trout Parks

During the catch-and-release season,
state trout parks (except Maramec Spring
Park) are open only Friday–Monday.

Catch-and-Release:
Nov. 11, 2022–Feb. 13, 2023

TRAPPING

Badger, Gray Fox, Red Fox

Nov. 15, 2022–Jan. 31, 2023

Beaver, Nutria

Nov. 15, 2022–March 31, 2023

Other Furbearers

Nov. 15, 2022–Feb. 28, 2023

Rabbits

Nov. 15, 2022–Jan. 31, 2023

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Badger, Gray Fox, Red Fox

Nov. 15, 2022–Jan. 31, 2023

Bobcat, Opossum, Raccoon, Striped Skunk

Nov. 15, 2022–Feb. 28, 2023

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2022–March 3, 2023

Deer

Archery:
Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Alternative Methods Portion:
Dec. 24, 2022–Jan. 3, 2023

Pheasant

Nov. 1, 2022–Jan. 15, 2023

Quail

Nov. 1, 2022–Jan. 15, 2023

Rabbit

Oct. 1, 2022–Feb. 15, 2023

Squirrel

May 28, 2022–Feb. 15, 2023

Turkey

Archery:
Nov. 23, 2022–Jan. 15, 2023

Waterfowl

See the Migratory Bird and Waterfowl
Hunting Digest or visit short.mdc.mo.gov/ZZx
for more information.



ILLUSTRATION: MARK RATHIEL



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Though winter weather might be frightful, it can also produce spectacular beauty, like these ice formations at Hickory Canyons Natural Area in New Offenburg. So, grab that extra layer and get outside. What winter phenomenon will you discover?

📷 by **David Stonner**

Free to Missouri households

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